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Title: Thermal alteration of flint material: experimental observations

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Abstract:

Palaeolithic and Mesolithic lithic assemblages often contain a considerable amount of light to heavily burnt flint artefacts, e.g. as a result of accidental or intentional burning in fire hearths. Often those artefacts experienced sudden rapid heating and extremely high temperatures, unlike what happens with intentional heat treatment. To investigate the influence of such conditions on flint, controlled archaeological experiments were carried out both in laboratory and open air setting. In the first, flint artefacts were heated in a muffle furnace under controlled conditions. In a more realistic environment, i.e. open air setting, the artefacts were positioned at different distances from the centre of the fires. Temperature was monitored using a heat camera and infrared thermometer. This way, the behaviour of flint in the two different settings was examined.

The developed methodology allows to study the different transformations in flint material during heating, both at a geochemical and a structural level (e.g. cracks, pot-lids, colour change). Eventually, the extent to which heating processes affect the preservation of prehistoric use-wear traces will be investigated. This way, a critical assessment can be made of the potential information loss caused by disregarding heated flint artefacts, as is often the case in microwear studies.